The following listing of Claims replaces all previous listings:

1. (Currently amended) A method of forming a metal-insulator-metal type capacitor structure in an integrated circuit memory device, comprising:

crystallizing an HfO_2 dielectric layer on a lower electrode of a capacitor structure in a low temperature plasma treatment at a temperature in a range between about 250 degrees Centigrade and about 450 degrees Centigrade; and

forming an upper electrode on the HfO_2 dielectric layer, wherein forming an upper electrode comprises forming the upper electrode using a metal source containing halogen or an organometallic compound, or a combination thereof.

2. (Original) A method according to Claim 1 wherein crystallizing an HfO_2 dielectric layer further comprises:

crystallizing the HfO_2 dielectric layer in a range between about 350 degrees Centigrade and about 450 degrees Centigrade.

Claim 3 (Canceled).

4. (Currently amended) A method according to Claim [[3]] 1 wherein forming the upper electrode using a metal source further comprises forming the upper electrode using a metal source containing Cl.

5. (Previously presented) A method according to Claim 1 wherein crystallizing an HfO_2 dielectric layer further comprises:

crystallizing the HfO_2 dielectric layer in the low temperature plasma atmosphere including an N gas.

6. (Previously presented) A method according to Claim 5 wherein crystallizing an HfO_2 dielectric layer further comprises:

crystallizing the HfO_2 dielectric layer in the low temperature plasma atmosphere including NH_3 gas or N_2O gas or N_2 gas or combinations thereof.

7. (Currently amended) A method of forming a metal-insulator-metal type capacitor structure in an integrated circuit memory device, comprising:

forming a lower electrode on a substrate;

forming an HfO_2 dielectric layer on the lower electrode;

processing the HfO_2 dielectric layer in a plasma atmosphere at a temperature in a range between about 250 degrees Centigrade and about 450 degrees Centigrade; and

forming an upper electrode on the HfO_2 dielectric layer, wherein the upper electrode is formed using a halogen-containing metal source or an organometallic compound source or a combination thereof.

8. (Original) A method according to Claim 7 wherein the lower electrode is formed of a metal nitride or a noble metal or combinations thereof.

9. (Original) A method according to Claim 8 wherein the lower electrode is formed of TiN or TaN or WN or Ru or Ir or Pt or combinations thereof.

10. (Original) A method according to Claim 7 wherein the HfO_2 dielectric layer is formed using atomic layer deposition or chemical vapor deposition or physical vapor deposition or metal-organic chemical vapor deposition.

11. (Previously presented) A method according to Claim 7 wherein processing the HfO_2 dielectric layer in a plasma atmosphere is performed using plasma of N-containing gas.

12. (Previously presented) A method according to Claim 11 wherein the N-containing gas includes NH_3 or N_2O or N_2 or combinations thereof.

13. (Original) A method according to Claim 7 wherein the upper electrode is formed of a metal nitride or a noble metal or combinations thereof.

14. (Original) A method according to Claim 13 wherein the upper electrode is formed of TiN or TaN or WN or Ru or Ir or Pt, or combinations thereof.

Claim 15 (Canceled).

16. (Currently amended) ~~A method according to Claim 7~~ A method of forming a metal-insulator-metal type capacitor structure in an integrated circuit memory device, comprising:

forming a lower electrode on a substrate;

forming an HfO_2 dielectric layer on the lower electrode;

processing the HfO_2 dielectric layer in a plasma atmosphere at a temperature in a range between about 250 degrees Centigrade and about 450 degrees Centigrade; and

forming an upper electrode on the HfO_2 dielectric layer, wherein the lower electrode has a one-cylinder-stack (OCS) structure.

17. (Original) A method according to Claim 7 wherein the plasma atmosphere is maintained at a temperature in a range between about 250 degrees Centigrade and about 450 degrees Centigrade.

18. (Previously presented) A method of forming a metal-insulator-metal type capacitor in an integrated circuit memory device, comprising:

forming a buried contact plug in a first interlayer dielectric layer on a substrate;

forming a silicon nitride layer and a second interlayer dielectric layer on the buried contact plug;

forming a buffer buried contact plug in the silicon nitride layer and in the second interlayer dielectric layer to contact the buried contact plug;

sequentially forming a high density plasma layer, a silicon nitride layer, a protection layer, and an insulating layer on the buffer buried contact plug to form a cover layer;

removing a portion of the cover layer to form a hole to expose at least a portion of the buffer buried contact plug;

forming a conductive layer in the hole and outside the hole on the insulating layer using a Cl source metal;

forming a sacrificial layer on the conductive layer inside and outside the hole;

removing a portion of the of the sacrificial layer outside the hole to expose the insulating layer;

removing the insulating layer from around the conductive layer to form a lower electrode for the capacitor;

forming an amorphous HfO_2 dielectric layer on the lower electrode;

crystallizing the amorphous HfO_2 dielectric layer on the lower electrode in a low temperature plasma atmosphere including NH_3 gas or N_2O gas or N_2 gas or combinations thereof in temperature range between about 350 degrees Centigrade and about 450 degrees Centigrade to provide a crystallized HfO_2 dielectric layer; and

forming an upper electrode on the crystallized HfO_2 dielectric layer using a halogen-containing metal source or an organometallic compound source or a combination thereof.

Claims 19-20 (Canceled).